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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,596	03/16/2004	Naoto Matono	12553/130	3887

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EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

Office Action Summary	Application No.	Applicant(s)	
	10/802,596	MATONO, NAOTO	
	Examiner	Art Unit	
	A. Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/175,962.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.**

Extensive mechanical and design details of apparatus should not be given.

2. The abstract of the disclosure is objected to because the content does not appear to be directed to the claimed invention, e.g. a process of making (of at least the steps defined in independent Claim 9). Correction is required. See MPEP § 608.01(b).
3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --A Method of Manufacturing a Magnetic Head--.

Claim Objections

4. Claim 9 is objected to because of the following informalities.

In Claim 9, the term “planting” (line 11) appears to be misspelled and should be replaced with –plating--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 11, 12, 15, 16, 19, 20, 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 11, there are two phrases, which are simply not understood, and are misleading, confusing and render the claim as being vague and indefinite. The first is “a material” (line 2). What material is being referring to here? Any new material, or a material of one of the previously recited elements or layers? The second is the phrase of “the second magnetic layer in used as the non-magnetic conductive material” (line 4). This phrase is so awkwardly worded, that is it is unclear what etching speed is being compared here, the second magnetic layer, or the non-magnetic conductive material (of the gap layer previous recited in Claim 9)?

In Claim 12, the same problems occur here as with Claim 11.

Dependent Claims 15, 16, 19, 20, 23 and 24 are rejected under 112, 2nd paragraph insomuch as these claims depend from Claims 11 and 12 above.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 9, 13, 17 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al 5,652,687 and Deroux-Dauphin 4,829,659.

Chen discloses a method of manufacturing a magnetic head comprising: a first magnetic layer (e.g. P2 in Fig. 7) having a first pole tip portion (e.g. P2(T)); a second magnetic layer (e.g. P1) having a second pole tip portion; each of the pole tip portions (in the pole top regions) to face a recording medium during operation; a gap layer G sandwiched between the first and second magnetic layers; a thin film coil (e.g. 110) disposed in a space between the first and second magnetic layers; an insulating layer I₂ that fills the space; where the method includes forming the gap layer G with a non-magnetic conductive material; and selectively forming the first pole tip portion P2(T) on the gap layer by growing a plating film with the gap layer (col. 7, lines 44-48).

Regarding Claim(s) 13, Chen further teaches that the non-magnetic conductive material of the gap layer can be made from one of: copper, gold, or nickel chromium (col. 6, lines 33-39).

Regarding Claim(s) 17 and 21, Chen further teaches that the first magnetic layer P2 is formed with the first pole tip portion P2(T) as the plating film and as one, single continuous layer (shown in Fig. 7).

Chen teaches that the gap layer is used for plating of the first pole top portion P2(T), but does not explicitly say that the gap layer is used as an electrode. However, it is noted that the gap layer of Chen is inherently capable of being used as “an electrode” for plating of the first pole tip portion because of the *conductive* material, or conductive properties, that the gap layer contains.

As extrinsic evidence, the reference is cited to Deroux-Dauphin that shows that any non-magnetic conductive material (e.g. 12 or 14), or any conductive metal, can be used an electrode to form a plating film of a magnetic material, or magnetic layer (col. 2, lines 13-19 and lines 32-34).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 10, 14, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al and Deroux-Dauphin, in view of Armstrong et al 5,901,432.

Chen and Deroux-Dauphin disclose the claimed manufacturing method as relied upon above in Claim 9, and further including Claim 14 (as this is equivalent to Claim 13 above) and Claims 18 and 22 (as this is equivalent to Claim 17 above). Chen and Deroux-Dauphin do not mention selectively etching the gap layer through ion milling by using at least the first pole tip

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portion as a mask and, subsequently, selectively etching the second magnetic layer to a predetermined depth.

Armstrong utilizes an ion milling process that includes selectively etching a gap layer G through ion milling by using the first pole tip portion P2 as a mask and then, selectively etching the second magnetic layer P1 to a predetermined depth (see Fig. 3K and col. 5, line 64 to col. 6, line 24). The purpose of the ion milling process of Armstrong is to align the pole tips with the gap layer and advantageously minimize any stray flux leakage around the gap layer (col. 1, lines 52-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chen et al and Deroux-Dauphin by utilizing the ion milling process of Armstrong, for the advantage of aligning the first and second pole tip portions and minimize any stray flux leakage around the gap layer.

11. Claims 11, 15, 19 and 23, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al and Deroux-Dauphin in view of Taylor et al 4,377,437.

Chen et al and Deroux-Dauphin disclose the claimed manufacturing method as relied upon above in Claim 9, further including Claim 15 (as this is equivalent to Claim 13) and Claims 19 and 23 (as this is equivalent to Claim 17).

Chen et al and Deroux-Dauphin do not mention a material on which an etching speed through ion milling is within a range from being higher than 0.5 times to being no more than 2 times an etching speed of the second magnetic layer.

Taylor shows an etching speed process including an etch speed of 1.3 times can be achieved between a material of a magnetic layer that is covered (or protected) relative to the

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material of the magnetic layer that is not covered (or not protected), during ion milling (col. 2, lines 27-55). The purpose of having this etching speed allows fine patterning of layered materials (col. 1, lines 10-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chen et al and Deroux-Dauphin by having the material of the portion of the second magnetic material be etched at an etch speed that is 1.3 times more than the etching speed of the second magnetic layer not covered, as taught by Taylor, to positively allow accurate fine patterning of the second magnetic layer.

12. Claims 12, 16, 20 and 24, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al and Deroux-Dauphin, as applied to claims 9 and 10 above, and further in view of Taylor, for the same reasons set forth in paragraph 11 above. It is noted that Claim 12 is equivalent to Claim 11, Claim 16 is equivalent to Claim 13 and Claims 20 and 24 are each equivalent to Claim 17.

Conclusion

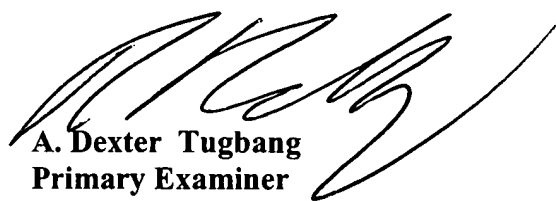
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


A. Dexter Tugbang
Primary Examiner
Art Unit 3729

May 15, 2006